Claims _What is Claimed is_

1.   A speech coding method according to a code-excited linear prediction (Code-Excited Linear Prediction: CELP) speech coding method, comprising:

5   evaluating a noise level of a speech in a concerning coding period by using a code or coding result of at least one of spectrum information, power information, and pitch information; and

selecting one of a plurality of excitation codebooks based on an evaluation result.

10   2.   The speech coding method of claim 1, further comprising:

the plurality of excitation codebooks storing time series vectors with various noise levels; and

switching the plurality of excitation codebooks based on the evaluation result of the noise level of the speech.

15   3.   The speech coding method of claim 1, further comprising changing a noise level of time series vectors stored in the excitation codebooks based on the evaluation result of the noise level of the speech.

4.   The speech coding method of claim 3, further comprising:

an excitation codebook storing noise time series vectors; and

20   generating a low noise time series vector by sampling signal samples in the time series vectors based on the evaluation result of the noise level of the speech.

5.   The speech coding method of claim 3, further comprising:

a first excitation codebook storing a noise time series vector and a

25   second excitation codebook storing a non-noise time series vector; and

generating a time series vector by adding the time series vector in the first excitation codebook and the time series vector in the second excitation codebook by weighting based on the evaluation result of the noise level of the speech.

6. A speech decoding method according to a code-excited linear prediction (CELP) speech decoding method, comprising:

evaluating a noise level of a speech in a concerning decoding period by using a code or decoding result of at least one of spectrum information, power information, and pitch information; and

selecting one of a plurality of excitation codebooks based on an evaluation result.

7. The speech decoding method of claim 6, further comprising:

the plurality of excitation codebooks storing time series vectors with various noise levels; and

switching the plurality of excitation codebooks based on the evaluation result of the noise level of the speech.

8. The speech decoding method of claim 6, further comprising changing a noise level of time series vectors stored in the excitation codebooks based on the evaluation result of the noise level of the speech.

9. The speech decoding method of claim 8, further comprising:

an excitation codebook storing noise time series vectors; and

generating a low noise time series vector by sampling signal samples in the time series vectors based on the evaluation result of the noise level of the speech.

10. The speech decoding method of claim 8, further comprising:

a first excitation codebook storing a noise time series vector and a second excitation codebook storing a non-noise time series vector; and

generating a time series vector by adding the time series vector in the first excitation codebook and the time series vector in the second excitation

5   codebook by weighting based on the evaluation result of the noise level of the speech.

11.   A speech coding apparatus, comprising:

a spectrum information encoder for coding spectrum information of an input speech, and outputting a coded spectrum information as an element of a

10   coding result;

a noise level evaluator for evaluating a noise level of a speech in a concerning coding period by using a code or coding result of at least one of spectrum information and power information, obtained from the coded spectrum information provided by the spectrum information encoder, and

15   outputting an evaluation result;

a first excitation codebook storing a plurality of non-noise time series vectors;

a second excitation codebook storing a plurality of noise time series vectors;

20   an excitation codebook switch for switching the first excitation codebook and the second excitation codebook based on the evaluation result by the noise level evaluator;

a weighting-adder for weighting the time series vectors from the first excitation codebook and second excitation codebook depending on respective

25   gains of the time series vectors and adding;

a synthesis filter for producing a coded speech based on an excitation signal, which is a weighted time series vector, and the coded spectrum information from the spectrum information encoder; and

a distance calculator for calculating a distance between the coded

5 speech and the input speech, searching an excitation code and gain for minimizing the distance, and outputting a result as an excitation code and a gain code as a coding result.

12. A speech decoding apparatus, comprising:

a spectrum information decoder for decoding a spectrum information

10 code to spectrum information;

a noise level evaluator for evaluating a noise level of a speech in a concerning decoding period by using a decoding result or the spectrum information code of at least one of spectrum information and power information, obtained from decoded spectrum information provided by the

15 spectrum information decoder, and outputting an evaluation result;

a first excitation codebook storing a plurality of non-noise time series vectors;

a second excitation codebook storing a plurality of noise time series vectors;

20 an excitation codebook switch for switching the first excitation codebook and the second excitation codebook based on the evaluation result of the noise level evaluator;

a weighting-adder for weighting the time series vectors from the first excitation codebook and second excitation codebook depending on respective

25 gains of the time series vectors and adding; and

a synthesis filter for producing a decoded speech based on an excitation signal, which is a weighted time series vector, and the decoded spectrum information from the spectrum information decoder.

13. A speech coding apparatus according to a code-excited linear prediction (CELP) speech coding apparatus comprising:

a noise level evaluator for evaluating a noise level of a speech in a concerning coding period by using a code or coding result of at least one of spectrum information, power information, and pitch information; and

an excitation codebook switch for switching a plurality of excitation codebooks based on an evaluation result of the noise level evaluator.

14. A speech decoding apparatus according to a code-excited linear prediction (CELP) speech decoding apparatus comprising:

a noise level evaluator for evaluating a noise level of a speech in a concerning decoding period by using a code or decoding result of at least one of spectrum information, power information, and pitch information; and

an excitation codebook switch for switching a plurality of excitation codebooks based on an evaluation result.